THE ANNALS

AND

MAGAZINE OF NATURAL HISTORY.

[SECOND SERIES.]

No. 44. AUGUST 1851.

VIII.—*On the Hinge of the Fossil Genus* Platymya, *Agassiz; with the description of a new species.* By J. Lycett, Esq.*

M. Agassiz proposed to constitute his genus *Platymya* with certain flattened and gaping bivalve shells whose figure differs sufficiently from that of other genera of fossil Myadæ, and he characterized with precision the external features of the group; but as the hinge remained unknown to him, the genus could not be considered as established. Subsequently M. D'Orbigny, from a consideration of several other species which he described in the 'Paléontologie Française,' believing that he had discovered in certain of their moulds impressions of an internal spoon-shaped process, and likewise of the rib which abuts against it, concluded that some of the species at least were true Anatinas, and therefore designated them as such. On the other hand, M. Agassiz†, whilst admitting the full importance of the characters noticed by M. D'Orbigny, and the possibility that in consequence *Platymya* may be reduced to the rank of a subgenus only, states his impression that nevertheless it may be a good genus, and directs attention to an important distinction between the two forms, viz. that in the Anatinas the anterior region is the most produced, but in *Platymya* it is the posterior which is most prominent. M. Agassiz therefore refused to abandon his genus *Platymya*, and reunited the six Anatinas of M. D'Orbigny to his own as additional species of *Platymya*. *Platymya* is exemplified in the 'Etudes Critiques' by six species only; the number of individuals in each species is stated to be but very few, and that the form altogether had not previously been noticed by palæontologists. All of the species pertain to the Cretaceous system of rocks with two exceptions, one belonging to the upper, and the

* Read to the Cotswold Naturalists' Club, June 24, 1851.

† Études Critiques sur les Mollusques fossiles, Myes, Introduction, p. xvi.

remaining one to the middle division of the Oolitic system. The present species has claims upon our notice beyond that of a new species merely, inasmuch as it is the first English recorded example of the genus,—the first which has been identified in the lower division of the Oolitic system; and lastly, it has the important and novel advantage of having its test preserved and the character of its hinge clearly exposed. Although six years have elapsed since the publication of the 'Etudes Critiques,' the state of uncertainty in which the hinges of several of the genera therein described were left by its distinguished author has not hitherto been removed; our own literature more especially is deficient in information relating to the extensive family of fossil Myadæ: these circumstances it is trusted will be deemed a sufficient excuse for presenting a brief description of the genus *Platymya* translated from the before-mentioned work of M. Agassiz.

"The Platymyas are near to the Arcomyas in their form and general physiognomy, but are distinguished by a general flatness of the valves, by the nearly median position of the umbones, which are very depressed, by the extremities being much developed and very large. The two extremities gape much, more especially the posterior one. The cardinal area is much less characterized than in the Arcomyas; the marginal keel which separates the area from the sides is not very distinct, and consequently is of little assistance in the determination of species. The ridges or folds of the sides are usually distinct, concentric and well marked upon the anterior side, but more indistinct and irregular upon the posterior. The lines of growth are not usually observed upon the exterior of the moulds, neither are they visible upon the internal moulds. Hinge unknown. The position of the umbones will always distinguish it from *Gresslya*, *Homomya* and *Myopsis*; *Mactromya* is usually more short and convex."

It will be perceived from the above extract, that a comparison of our new shell with the several species of *Platymya* must depend upon the external form only, inasmuch as no direct knowledge of the hinge has heretofore been obtained, and the remarks of M. D'Orbigny are based solely upon impressions in the moulds. Whatever value however may be attributed to impressions in moulds must yield to a disclosure of the hinge itself, and in the present instance this direct evidence is combined with a shell whose external characters agree with those of *Platymya*, and cannot with propriety be referred to any other known genus.

In two instances we have succeeded in exposing the hinge in each valve, and our definition of *Platymya*, derived from these examples, will be as follows:—

Shell thin, nearly equivalve, transverse, compressed; umbones small, depressed, contiguous, submesial; cardinal area indistinct,

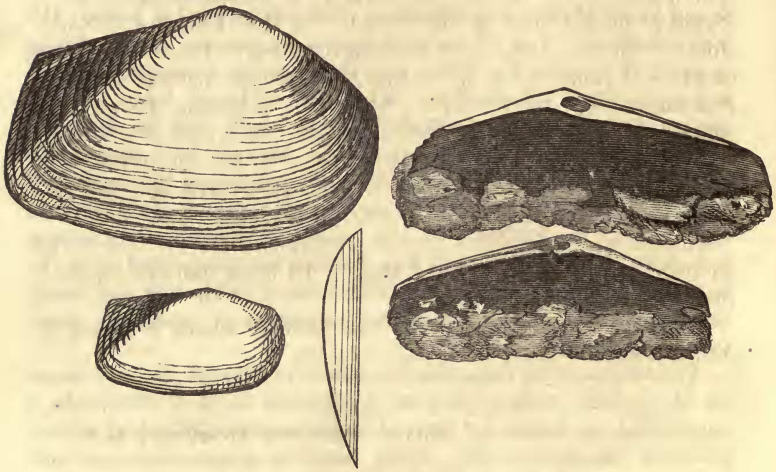
its superior border having in each valve a narrow elongated groove with an acute edge, as in *Mactromya*; both sides of the shell wide, more especially the posterior one, which is truncated; both extremities gape slightly, more especially the posterior extremity; ventral margin regular, curved moderately and elliptically. Hinge plate internally incrassated and lengthened posteriorly, having *a single small obtuse cardinal tooth in the left valve and a corresponding oval pit in the right valve*; lateral teeth none; muscular impressions unknown.

The hinge apparatus may be regarded as forming an exception to the usual characters of fossil Myadæ, which are for the most part edentulous; the present form however can only be considered as an aberrant modification of the same kind of hinge: the tooth is small; it is of an oval figure, its greater length being lateral; it projects but little, and the opposite corresponding pit consequently is but shallow. This kind of hinge, taken in connexion with the other characters of the shell, will be found to remove it from all other genera of the Myadæ, both recent and fossil: there is nothing resembling the projecting spoon-shaped process and accessory tricuspid osseous rib supporting an internal ligament, as in *Anatina*; on the contrary, there is every reason to believe that the ligament was external and supported upon the lengthened posterior grooves. The delicacy of the test and hardness of the matrix have foiled our attempts to expose the muscular impressions.

The tendency of these details then is to support the conclusion of M. Agassiz with regard to the generic value of *Platymya*, a conclusion at which he arrived from a consideration of certain external characters only; these however constitute a generic entireness upon which he relied with confidence even after a palæontologist of eminence had pronounced an adverse opinion, and he remained without the means of verifying his inductions by an examination of the hinge. The dental characters however of the several genera of fossil Myadæ would seem to be of much less relative importance than they acquire in certain other families of the Lamellibranchiate Mollusks. In the fossil Myadæ the teeth are for the most part absent altogether, the ligamental support being derived from a thickening internally of the posterior and superior border, forming a kind of lengthened posterior rib, and it is the only portion of the shell which is not thin and delicate. Without entering into details respecting the hinges of the several genera, it may suffice to mention that *Mactromya*, *Goniomya*, *Cercomya*, *Ceromya*, *Homomya*, *Myopsis* and *Arcomya* have all with certain modifications this description of hinge apparatus, which should be regarded as of coordinate rank only with other characters which are external and are connected with the general form and markings of the surface. *Platymya* has a

similar kind of posterior elongated rib terminating anteriorly in a tooth and opposite corresponding fossa so small as not to form any projection beneath the hinge plate; the internal moulds consequently would exhibit little of the structure of the hinge, and supply no sufficient data whereby its real character could be inferred. The narrow lengthened posterior groove in each valve resembles those in *Mactromya*, in which however an hiatus remains between the grooves which does not exist in *Platymya*. *Arcomya* is destitute of these grooves.

Example. *Platymya Rodborensis*.



Shell compressed, subequilateral, with the posterior side wide, truncated, gaping moderately, the anterior extremity being nearly closed. The valves are equal, or with no apparent difference in their convexity. An obtuse and rather indistinct keel passes obliquely from the umbo to the infero-posterior extremity; folds or ridges concentric and irregular, distinct only upon the two extremities of the shell, and passing over the keel bent nearly at a right angle. Young specimens have their lateral diameter comparatively greater, but like the adult shell the middle portion is nearly smooth. The general outline has some resemblance to *P. tenuis* (Etud. Crit. t. 10 *a*, fig. 5–6), but in that species the hinge-line is more nearly horizontal, and the posterior border of the shell has a much larger hiatus. Our shell has likewise less convexity, and its posterior aperture is much smaller than in *P. hiantula* (Etud. Crit. t. 10 *a*, fig. 7–13); to other species the resemblance is more remote.

In common with other species of the genus, the general form